

Biosolids Annual Report: **Reporting year 2011**

3.1 Requirements -

3.2.1. Name of facility; Stromo, LLC

3.2.2. Permit number; 650222

3.2.3. Contact person for this facility:

3.2.3.1 Name; Lawton Lieder

3.2.3.2. Title; Operations Manager

3.2.3.3. Phone number; Desk 303-535-5677 or Cell 970-539-0653

3.2.4. The total amount of sewage sludge, in dry metric tons, that is generated by this facility during the reporting year; n/a, 0 dry tons

3.2.5. Sewage sludge received from other facilities during the reporting year:

3.2.5.1. Total amount of sewage sludge received (dry metric tons) 1,910 dry tons

3.2.5.2. For each facility sending sewage sludge to this facility:

Name of facility; Metro Wastewater Reclamation District

Location of that facility; Denver, Co

Amount of sewage sludge, in dry metric tons, received from the facility; 1,910 dry tons

3.2.6. Sewage sludge sent to other facilities/operations: n/a, 0 dry tons

3.2.7. The amount of sewage sludge, in dry metric tons, placed in storage during the reporting year. n/a, 0 dry tons
(all incoming material is used for composting and dispersed through sale of material)

3.2.8. A brief narrative description of the treatment provided to sewage sludge. Name each treatment process and give a brief summary of operating conditions (e.g., anaerobic digestion, 20 days at 250 C) and pollutant concentrations:

Stromo, LLC receives biosolids cake material from Denver Metro Wastewater Reclamation District. Prior to delivery of materials at the Stromo composting site, Metro provides Stromo with their self monitoring summary reports. These reports verify compliance with biosolids sampling and the completion of Volatile Solids Reduction, which confirms the process of Vector Attraction Reduction has been completed offsite prior to delivery.

Biosolids arrive at the Stromo facility by truck. After an initial inspection of the material, receipt of the material is documented. Documentation will include generator and transporter information, classification of the material, and volume information. After documentation is completed, the materials are delivered to the designated composting/recycling operation and offloaded at designated areas for blending or mixing, placement in windrows, in-vessel systems, storage, and or processing.

Biosolids are mixed on the mixing pad with bulking agents and placed in appropriate production windrows, piles or vessels immediately upon receipt at the facility. Biosolids are covered with a layer of wood chips/bulking agent prior to the end of the next day. Biosolids are mixed at a ratio of four parts wood feedstocks to one part biosolids, and then an additional two parts wood to one part composted material is added during the first turn of material.

Biosolids are composted separately from other materials in the designated location. Production activities will consist of mixing or blending of feedstocks, bulking agents, and wetting agents on the processing site, and

formation of, or placement in appropriate processing units (windrows, in-vessel systems, static piles, etc.). If wetting agents are needed (liquids), mixing will be accomplished on the mixing pad or applied with tank trucks directly to the windrows.

Aerated windrow composting is used as the composting procedure. In this procedure, feedstocks and bulking agents are blended to produce the pre-compost mixture. The compost mixture is placed in long piles called windrows. The windrows can be various sizes, but generally are approximately 12-18 feet wide, and 6-9 feet tall. These windrows are normally sized to accommodate the equipment that will be used to aerate them.

Once formed the bacteria and fungi present in the windrows will begin the composting process. The bacteria will cause the pile temperatures to increase. Pile temperatures will reach temperatures over 120 degrees.

Temperatures are controlled via aeration and by moisture balance. The major byproducts of the decomposition

process produced by the bacteria and fungi present in the pile are carbon dioxide, water vapor, and heat.

Pathogen reduction of biosolids material is met through the composting procedure, as specified by *40 CFR Part 503*. The heat process reaches at least 55 degrees Celsius for periods of times for seven consecutive days, at a minimum of three times. Temperatures are taken and logged daily.

During the composting period, the windrows will be aerated using the specialized equipment or loaders. The aeration process is done to introduce additional oxygen to the pile, release excess moisture, reduce particle size, and to condition the material in the windrow. Material is turned every seven days for seven weeks. It is then transported to a static pile for twelve months before leaving the site.

At the end of this process, material is sampled again to ensure the requirements for biosolids distribution have been met. The material is then taken through a screening process and dispersed offsite through the sale of composted material.

4.1 Requirements -

Biosolid samples are attached, including results for incoming biosolids and composted material using biosolids.

Pathogen Reduction

Class B:

- Class B – Alternative 1 (geometric mean of 7 samples)
- Class B – Alternative 2 (indicate which PSRP)
 - (a) aerobic digestion
 - (b) air drying
 - (c) anaerobic digestion
 - (d) composting
 - (e) lime stabilization (pH at 25° C or equivalent)
- Class B – Alternative 3 (attach PSRP equivalent documentation)

Vector Attraction Reduction

Method Used:

- Option 1 (minimum 38 percent reduction in volatile solids)
- Option 2 (Anaerobic process, with bench-scale demonstration)
- Option 3 (Aerobic Process, with bench scale demonstration)
- Option 4 (Specific Oxygen Uptake Rate (SOUR), aerobically digested)
- Option 5 (Aerobic Process plus raised temperature)
- Option 6 (Raise pH to 12 and retain at 11.5)
- Option 7 (75% solids with no unstabilized solids)
- Option 8 (90% solids with unstabilized solids)
- Option 9 (Injection below land surface with significant soil coverage)
- Option 10 (Covering active sewage sludge unit daily)

**See attached all Pathogen Reduction and Vector Attraction Reduction documentation to demonstrate compliance

5.1 Requirements -

Does not apply - No landfilling

6.1 Requirements -

Does not apply ~ No surface disposal

7.1 Requirements -

Does not apply – No land application from wastewater lagoons

10.7.4. Requirements - Certification

Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Printed Name: LAWTON L FERNER

Signature: Ranta L. Ferner

Date: 12/23/13

METRO WASTEWATER RECLAMATION DISTRICT

12-Month Self Monitoring Summary Report

Date	TOTAL ARSENIC mg/Kg		TOTAL CADMIUM mg/Kg		TOTAL CHROMIUM mg/Kg		TOTAL COPPER mg/Kg		TOTAL LEAD mg/Kg		TOTAL MERCURY mg/Kg		TOTAL MOLYBDENUM mg/Kg		TOTAL NICKEL mg/Kg		TOTAL SELENIUM mg/Kg		TOTAL ZINC mg/Kg	
	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	
01/11	1.9	1	25	741	39.3	1.31	20.6	14	9.3	693										
02/11	1.7	1	26	702	39.6	1.09	14.8	14	9.0	616										
03/11	1.6	2	27	632	37.8	1.03	16.1	12	8.3	610										
04/11	1.6	1	24	656	35.4	0.73	15.4	14	7.5	626										
05/11	1.7	1	24	691	33.9	0.99	16.8	15	8.6	652										
06/11	2.2	1	28	733	40.0	1.21	19.5	17	11.9	688										
07/11	2.5	1	31	738	41.6	0.78	17.4	18	11.5	797										
08/11	2.5	2	29	715	44.1	1.11	18.4	16	13.8	813										
09/11	2.1	2	30	688	39.8	0.75	18.2	16	10.7	835										
10/11	2.3	1	28	704	43.0	1.32	19.3	18	10.7	795										
11/11	1.9	1	30	726	40.9	0.84	20.1	16	10.0	748										
12/11	1.9	1	27	706	36.7	1.06	18.2	15	10.6	744										
Average	2.0	1	27	703	39.4	1.02	17.9	15	10.2	718										
Limits:																				
Grade I:	41	39		1500	300	17														
Grade II:	75	85		4300	840	57														
Grade III:																				
PH	NITRATE	AMMONIA	ORGANIC-N	TRN	TOTAL PHOSPHORUS	POTASSIUM	TOTAL SOLIDS	VOLATILE SOLIDS	FEC (GEO.)	SRT DAYS	Avg Temp DEG. F	VS RBD., %								
Date	SU	% DW	% DW	% DW	% DW	% DW	% DW	% DW	% DW	% DW	% DW	% DW	% DW	% DW	% DW	mpn/gTS				
01/11	8.3	0.00	0.58	6.68	7.30	2.38	0.168	21.10	76.4								22	98	57.9	
02/11	8.2	0.00	0.69	6.14	6.85	2.51	0.178	21.96	75.6								23	98	60.4	
03/11	8.3	0.00	0.76	6.24	6.99	2.33	0.176	21.52	76.3								23	98	61.4	
04/11	8.2	0.00	0.76	6.12	6.93	2.13	0.170	21.85	75.9								23	98	58.9	
05/11	8.2	0.00	0.59	6.15	6.92	2.19	0.176	21.98	75.0								25	99	56.5	
06/11	8.3	0.00	0.82	5.93	6.70	2.29	0.183	22.50	73.4								24	99	58.9	
07/11	8.6	0.00	5.58	6.47	2.15	0.206	22.98	70.3									24	98	56.7	
08/11	8.3	0.00	0.96	5.38	6.31	2.17	0.209	23.76	70.6								23	99	68.5	
09/11	8.5	0.00	1.14	5.30	6.48	2.58	0.224	23.01	70.8								24	99	65.2	
10/11	8.4	0.00	1.06	5.90	6.89	2.10	0.236	21.66	74.1								25	99	60.7	
11/11	8.5	0.00	1.22	6.16	7.34	2.69	0.289	20.07	75.0								24	98	58.4	
12/11	8.6	0.00	1.15	6.18	7.32	2.78	0.282	20.19	76.6								25	97	52.8	
Average	8.4	0.00	0.89	5.98	6.88	2.36	0.208	21.67	74.2								24	98	59.7	
Limit:																2000000	15	95	38	

All values are based on monthly averages.

<u>Class B Criteria</u>	<u>Minimum Allowed</u>	<u>Average</u>	<u>Maximum Allowed</u>
Pathogen Destruction:	24 Days	15 Days	
And			
Temperature, Deg. C(Deg. F)	=		
Or			
Fecal Coliform, mpn/gTS	=	36.9 (98)	35 Deg. C (95 Deg. F)
Vector Attraction Reduction: Volatile Solids Reduction	=	59.7	2,000,000
			38%

STROMO COMPOST SITE

Seven Day Turn Schedule

BIO 5	8/15/11	8/16/11	100	118	117	123	142	128	129	130	132	132	125	10/4/11	STATIC PILED
BIO 6	8/22/11	8/23/11	118	125	135	125	122	105	114	118	135	135	123	10/11/11	STATIC PILED
BIO 7	8/29/11	8/30/11	112	113	114	117	119	126	134	136	132	130	123	10/18/11	STATIC PILED
BIO 8	9/5/11	9/6/11	102	131	135	135	141	143	138	116	101	88	123	10/25/11	STATIC PILED
BIO 9	9/12/11	9/13/11	135	134	132	118	114	117	125	135	136	141	129	11/1/11	STATIC PILED
BIO 10	9/19/11	9/20/11	140	131	121	125	141	114	114	118	135	135	127	11/8/11	STATIC PILED
BIO 11	9/26/11	9/27/11	135	134	132	118	114	117	125	135	136	141	129	11/15/11	STATIC PILED
BIO 12	10/3/11	10/4/11	132	144	110	132	122	118	114	115	112	123	122	11/22/11	STATIC PILED
BIO 13	10/10/11	10/11/11	100	132	132	144	117	118	110	119	132	120	122	11/29/11	STATIC PILED
BIO 14	10/17/11	10/18/11	100	140	132	125	132	133	140	118	119	112	125	12/6/11	STATIC PILED
BIO 15	10/24/11	10/25/11	114	117	119	132	125	142	113	118	118	133	123	12/13/11	STATIC PILED
BIO 16	10/31/11	11/1/11	100	118	117	123	142	128	129	130	132	132	125	12/20/11	STATIC PILED
BIO 1	11/7/11	11/8/11	118	125	135	125	122	105	114	118	135	135	123	12/27/11	STATIC PILED
BIO 2	11/14/11	11/15/11	112	113	114	117	119	126	134	136	132	130	123	1/3/12	STATIC PILED
BIO 3	11/21/11	11/22/11	102	131	135	135	141	143	138	116	101	88	123	1/10/12	STATIC PILED
BIO 4	11/28/11	11/29/11	135	134	132	118	114	117	125	135	136	141	129	1/17/12	STATIC PILED
BIO 5	12/5/11	12/6/11	140	131	121	125	141	114	114	118	135	135	127	1/24/12	STATIC PILED
BIO 6	12/12/11	12/13/11	100	118	117	123	142	128	129	130	132	132	125	1/31/12	STATIC PILED
BIO 7	12/19/11	12/20/11	118	125	135	125	122	105	114	118	135	135	123	2/7/12	STATIC PILED
BIO 8	12/26/11	12/27/11	112	113	114	117	119	126	134	136	132	130	123	2/14/12	STATIC PILED



LABORATORY ANALYSIS REPORT

REPORT TO: LAWTON LIEDER

LAB NO: 26321.01

BILL TO: RENEWABLE FIBER - FT LUPTON
P.O. BOX 205
FORT LUPTON CO 80621

DATE RCVD: 1/20/11

REPORTED: 2/3/11

PROJECT: STROMO MORWAI/SOIL SAMPLES/COMPOST TEST

PO NO.: STROMO/MORWAI

SAMPLE ID: **BIO COMPOST**

MATRIX: COMPOST

SAMPLE DATE: 1/20/11

	AS RECEIVED BASIS	DRY MATTER BASIS	TMECC METHOD
TOTAL SOLIDS (%)	78.05	100.00	03.09-A
MOISTURE (%)	21.95	0.00	03.09-A
ORGANIC MATTER (%)	28.68	36.75	05.07-A
BULK DENSITY (LBS/CU YD)	931	727	SSSA
ASH (%)	49.37	63.25	05.07-A
SOLUBLE SALTS 1:5 (MMHOS/CM)	3.14	-	04-10-A
pH 1:5 (UNITS)	7.30	-	04-11-A
TOTAL NITROGEN (%)	1.425	1.826	04.02-D
ORGANIC NITROGEN (%)	0.929	1.190	CALC
AMMONIA NITROGEN (%)	0.4562	0.584	04.02-C
AMMONIA NITROGEN (PPM)	4,561.9	5,844.8	04.02-C
NITRATE NITROGEN (%)	0.0401	0.0513	04.02-B
NITRATE NITROGEN (PPM)	400.6	513.3	04.02-B
TOTAL PHOSPHORUS AS P (%)	1.620	2.075	04.02-A
TOTAL PHOSPHORUS AS P2O5 (%)	3.725	4.773	04.03-A
TOTAL POTASSIUM AS K (%)	0.806	1.033	04.03-A
TOTAL POTASSIUM AS K2O (%)	0.967	1.239	04.04-A
C/N RATIO	11	11	CALC
AMMONIA-N/NITRATE-N RATIO	11.4	11.4	CALC

TO CONVERT % TO PPM MULTIPLY BY 10,000. TO CONVERT % TO LBS/TON MULTIPLY BY 20.
COLORADO ANALYTICAL LABORATORY IS AN APPROVED TESTING FACILITY FOR THE US COMPOSTING COUNCIL'S SEAL OF TESTING ASSURANCE PROGRAM. SEE THE US COMPOSTING COUNCIL'S WEB SITE AT WWW.COMPOSTINGCOUNCIL.ORG. FOR MORE INFORMATION.
TMECC = "TEST METHODS FOR THE EXAMINATION OF COMPOSTING AND COMPOST"; US COMPOSTING COUNCIL; AUG 2001; W.H. THOMPSON

ANALYSIS SUPERVISED BY

240 South Main Street / Brighton, Colorado 80601-0507 / 303-659-2313
Mailing Address: P.O. Box 507 / Brighton, Colorado 80601-0507 / Fax: 303-659-2315



LABORATORY ANALYSIS REPORT

REPORT TO: LAWTON LIEDER

LAB NO: 26321.01

BILL TO: RENEWABLE FIBER - FT LUPTON
P.O. BOX 205
FORT LUPTON CO 80621

DATE RCVD: 1/20/11

REPORTED: 2/3/11

PROJECT:

PO NO.: STROMO/MORWAI

SAMPLE ID: **BIO COMPOST**

MATRIX: COMPOST

SAMPLE DATE: 1/20/11

	AS RECEIVED BASIS	DRY MATTER BASIS	TMECC METHOD
TOTAL SOLIDS (%)	78.05	100.00	03.09-A
MOISTURE (%)	21.95	0.00	03.09-A
ARSENIC (MG/KG)	1.9	2.5	04.06/ 7060
CADMIUM (MG/KG)	0.7	0.8	04.06/ 7130
CHROMIUM (MG/KG)	8.5	10.9	04.06/ 7190
COPPER (MG/KG)	186.8	239.4	04.06/ 7210
LEAD(MG/KG)	20.1	25.8	04.06/ 7420
MERCURY (MG/KG)	1.0	1.3	04.06/ 7471
MOLYBDENUM (MG/KG)	7.2	9.2	04.06/ 7480
NICKEL (MG/KG)	9.0	11.5	04.06/ 7520
SELENIUM (MG/KG)	1.3	1.7	04.06/ 7740
ZINC (MG/KG)	302.1	387.1	04.06/ 7950
PASS/ FAIL - USEPA CLASS A METALS STD	-	PASS	-

COLORADO ANALYTICAL LABORATORY IS AN APPROVED TESTING FACILITY FOR THE US COMPOSTING COUNCIL'S SEAL OF TESTING ASSURANCE PROGRAM. SEE THE US COMPOSTING COUNCIL'S WEB SITE AT WWW.COMPOSTING COUNCIL. ORG. FOR MORE INFORMATION.
TMECC = "TEST METHODS FOR THE EXAMINATION OF COMPOSTING AND COMPOST"; US COMPOSTING COUNCIL; AUG 2001; W.H. THOMPSON

ANALYSIS SUPERVISED BY

240 South Main Street / Brighton, Colorado 80601-0507 / 303-659-2313
Mailing Address: P.O. Box 507 / Brighton, Colorado 80601-0507 / Fax: 303-659-2315

Page 1 of 1

DATA APPROVED FOR RELEASE BY



LABORATORY ANALYSIS REPORT

REPORT TO: LAWTON LIEDER

LAB NO: 26321.01

BILL TO: RENEWABLE FIBER - FT LUPTON
P.O. BOX 205
FORT LUPTON CO 80621

DATE RCVD: 1/20/11

REPORTED: 2/3/11

PROJECT:

PO NO.: STROMO/MORWAI

SAMPLE ID: BIO COMPOST	SAMPLE DATE: 1/20/11	TMECC
MATRIX: COMPOST	AS RECEIVED BASIS	DRY MATTER BASIS
TOTAL SOLIDS (%)	78.05	100.00
MOISTURE (%)	21.95	0.00
FECAL COLIFORM (MPN/G)	-	<10
PASS/ FAIL - USEPA CLASS A PATHOGEN STD	-	PASS
		07.01-B

COLORADO ANALYTICAL LABORATORY IS AN APPROVED TESTING FACILITY FOR THE US COMPOSTING COUNCIL'S SEAL OF TESTING ASSURANCE PROGRAM. SEE THE US COMPOSTING COUNCIL'S WEB SITE AT WWW.COMPOSTINGCOUNCIL.ORG. FOR MORE INFORMATION.
TMECC = "TEST METHODS FOR THE EXAMINATION OF COMPOSTING AND COMPOST"; US COMPOSTING COUNCIL; AUG 2001; W.H. THOMPSON

ANALYSIS SUPERVISED BY

240 South Main Street / Brighton, Colorado 80601-0507 / 303-659-2313
Mailing Address: P.O. Box 507 / Brighton, Colorado 80601-0507 / Fax: 303-659-2315

Page 1 of 1

DATA APPROVED FOR RELEASE BY